

## ABSTRACT

A connection end portion of a PC fiber **10** is fused by heating to provide a sealing portion **15** which seals holes **12a** of a cladding **12**. Length  $L$  of the sealing portion **15** is  
5 determined by calculation based on the conditions such as an incident angle  $\theta$  [°] of signal light **22** with respect to the PC fiber **10**, an outer diameter  $D$  [ $\mu\text{m}$ ] of the fiber, a diameter  $a$  [ $\mu\text{m}$ ] of the core of the fiber and a refractive index  $n$  of the sealing portion **15**.